Agricultural Operation Practices Act (AOPA)

Manure Characteristics and Land Base Code

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Forward

The Manure Characteristics and Land Base Code is referenced in the *Agricultural Operation Practices Act* (AOPA). The information provided in this document is to be used to fulfill requirements outlined in the regulations.

Contents

2 Land Base Requirements for All Livestock Types

- Beef 2
- Bison 5
- Cervid 5
- Dairy 6
- Goats 16
- Horse 17
- Poultry 20
- Sheep 25
- Swine 27
- Wild Boar 39

40 Nutrient Content of Typical Agricultural Livestock Manures

41 Assumed Crop Nutrient Requirements for Determining Land Base Guidelines

42 Manure Production for Various Livestock Types

- Liquid Manure Production 42
- Solid Manure Production 43

The following tables are to be used for section 24 of the AOPA Standards and Administration Regulation.

Land Base Requirements for Beef - Feeder Calves < 550 lbs (solid manure)

No. of Calves	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
200	6	5	4	3
225	7	6	4	3
250	8	6	5	4
275	8	7	5	4
300	9	8	6	5
350	11	9	7	5
400	12	10	8	6
450	14	12	9	7
500	15	13	10	8
550	17	14	11	8
600	19	15	12	9
700	22	18	13	11
800	25	21	15	12
900	28	23	17	14
1000	31	26	19	15
1500	46	39	29	23
2000	62	52	38	31
2500	77	65	48	39
3000	93	77	58	46
4000	124	103	77	62
5000	155	129	96	77

Land Base Requirements for Beef - Feeders 450 to 900 lbs (solid manure)

No. of Feeders	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
300	24	20	15	12
400	32	27	20	16
500	40	33	25	20
600	48	40	30	24
700	56	47	35	28
800	64	53	40	32
900	72	60	45	36
1000	80	67	50	40
1200	96	80	60	48
1400	112	93	70	56
1600	128	107	80	64
1800	144	120	90	72
2000	160	134	100	80
2500	200	167	125	100
3000	240	200	150	120
3500	280	234	175	140
4000	321	267	200	160
5000	401	334	250	200
6000	481	401	301	240
7000	561	467	351	280
8000	641	534	401	321
9000	721	601	451	361
10000	801	668	501	401
12000	962	801	601	481
14000	1122	935	701	561
16000	1282	1069	801	641
18000	1443	1202	902	721
20000	1603	1336	1002	801
25000	2003	1670	1252	1002
30000	2404	2003	1503	1202
40000	3206	2671	2003	1603
50000	4007	3339	2504	2003

Land Base Requirements for Beef - Finishers/Cows 900+ lbs (solid manure)

No. of Finishers /Cows	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
300	37	31	23	19
400	50	42	31	25
500	62	52	39	31
600	75	62	47	37
700	87	73	55	44
800	100	83	62	50
900	112	94	70	56
1000	125	104	78	62
1200	150	125	94	75
1400	175	146	109	87
1600	200	166	125	100
1800	225	187	140	112
2000	250	208	156	125
2500	312	260	195	156
3000	375	312	234	187
3500	437	364	273	219
4000	499	416	312	250
5000	624	520	390	312
6000	749	624	468	375
7000	874	728	546	437
8000	999	832	624	499
9000	1124	937	702	562
10000	1249	1041	780	624
12000	1498	1249	937	749
14000	1748	1457	1093	874
16000	1998	1665	1249	999
18000	2248	1873	1405	1124
20000	2497	2081	1561	1249
25000	3122	2601	1951	1561
30000	3746	3122	2341	1873
40000	4995	4162	3122	2497
50000	6243	5203	3902	3122

Land Base Requirements for Bison (solid manure)

No. of Bison	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
100	5	4	3	2
200	10	8	6	5
300	14	12	9	7
400	19	16	12	10
500	24	20	15	12
600	29	24	18	14
700	34	28	21	17
800	38	32	24	19
900	43	36	27	22
1000	48	40	30	24

Land Base Requirements for Cervid - Deer (solid manure)

No. of Deer	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
100	2	2	1	1
200	4	3	2	2
300	6	5	4	3
400	8	6	5	4
500	9	8	6	5
600	11	9	7	6
700	13	11	8	7
800	15	13	9	8
900	17	14	11	9
1000	19	16	12	9

Land Base Requirements for Cervid - Elk (solid manure)

No. of Elk	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
100	4	3	2	2
200	8	6	5	4
300	12	10	7	6
400	15	13	10	8
500	19	16	12	10
600	23	19	14	12
700	27	22	17	13
800	31	26	19	15
900	35	29	22	17
1000	38	32	24	19

Land Base Requirements for Dairy - Calves < 350 lbs (solid manure)

No. of Calves	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
200	3	3	2	2
225	4	3	2	2
250	4	3	3	2
275	4	4	3	2
300	5	4	3	2
350	6	5	4	3
400	7	5	4	3
450	7	6	5	4
500	8	7	5	4
550	9	7	6	5
600	10	8	6	5
700	11	10	7	6
800	13	11	8	7
900	15	12	9	7
1000	16	14	10	8
1500	24	20	15	12
2000	33	27	20	16
2500	41	34	26	21
3000	49	41	31	25
4000	65	54	41	33
5000	82	68	51	41

Land Base Requirements for Dairy - Dry Cows (solid manure)

No. of Dry Cows	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
30	12	10	7	6
80	31	26	20	16
100	39	33	24	20
120	47	39	29	24
140	55	46	34	28
160	63	53	39	31
180	71	59	44	35
200	79	66	49	39
225	89	74	55	44
250	98	82	61	49
275	108	90	67	54
300	118	99	73	59
350	138	115	86	69
400	157	132	98	79
450	177	148	110	89
500	197	165	122	98
550	216	181	135	108
600	236	197	147	118
700	276	230	171	138
800	315	263	196	157
900	354	296	220	177
1000	394	329	245	197
1500	590	494	367	295
2000	787	658	490	394
2500	984	823	612	492
3000	1181	987	735	590
4000	1574	1316	980	787
5000	1968	1645	1225	984

Land Base Requirements for Dairy - Free Stall: Dry Cows (liquid manure)

No. of Dry Cows	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
30	14	12	9	7
80	38	32	24	19
100	48	40	30	24
120	57	48	36	29
140	67	56	42	33
160	76	64	47	38
180	86	72	53	43
200	95	80	59	48
225	107	90	67	54
250	119	100	74	60
275	131	110	82	66
300	143	119	89	71
350	167	139	104	83
400	191	159	119	95
450	214	179	133	107
500	238	199	148	119
550	262	219	163	131
600	286	239	178	143
700	334	279	208	167
800	381	319	237	191
900	429	358	267	214
1000	477	398	297	238
1500	715	597	445	357
2000	953	796	593	476
2500	1191	996	741	596
3000	1430	1195	890	715
4000	1906	1593	1186	953
5000	2383	1991	1483	1191

Land Base Requirements for Dairy - Free Stall: Lactating Cows Only (liquid manure)

No. of Lactating Cows	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
30	32	27	20	16
80	87	73	54	44
100	109	91	68	55
120	131	110	82	66
140	153	128	95	76
160	175	146	109	87
180	197	164	122	98
200	219	183	136	109
225	246	206	153	123
250	273	228	170	137
275	301	251	187	150
300	328	274	204	164
350	383	320	238	191
400	437	365	272	219
450	492	411	306	249
500	546	457	340	273
550	601	502	374	301
600	656	548	408	328
700	765	639	476	382
800	874	731	544	437
900	984	822	612	492
1000	1093	913	680	546
1500	1639	1370	1020	820
2000	2186	1827	1360	1093
2500	2732	2283	1700	1366
3000	3279	2740	2040	1639
4000	4372	3654	2720	2186
5000	5464	4567	3400	2732

Land Base Requirements for Dairy - Free Stall: Lactating Cows with All Associated Dries, Heifers and Calves (liquid manure)

No. of Lactating Cows	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
30	45	37	28	22
80	119	99	74	59
100	148	124	93	74
120	178	148	111	89
140	208	173	130	104
160	238	198	148	119
180	267	223	167	134
200	297	247	186	148
225	334	278	209	167
250	371	309	232	186
275	408	340	255	204
300	445	371	278	223
350	520	433	325	260
400	594	495	371	297
450	668	557	418	334
500	742	619	464	371
550	817	681	510	408
600	891	742	557	445
700	1039	866	650	520
800	1188	990	742	594
900	1336	1114	835	668
1000	1485	1237	928	742
1500	2227	1856	1392	1114
2000	2970	2475	1856	1485
2500	3712	3094	2320	1856
3000	4455	3712	2784	2227
4000	5940	4950	3712	2970
5000	7425	6187	4640	3712

Land Base Requirements for Dairy - Free Stall: Lactating Cows with Dry Cows Only (liquid manure)

No. of Lactating Cows	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
30	39	32	24	19
80	104	87	64	52
100	129	108	81	65
120	155	130	97	78
140	181	151	113	91
160	207	173	129	104
180	233	195	145	116
200	259	216	161	129
225	291	243	181	146
250	324	270	201	162
275	356	297	221	178
300	388	325	242	194
350	453	379	282	226
400	518	433	322	259
450	582	487	362	291
500	647	541	403	324
550	712	595	443	356
600	777	649	483	388
700	906	757	564	453
800	1035	865	644	518
900	1165	974	725	582
1000	1294	1082	805	647
1500	1941	1623	1208	971
2000	2588	2163	1611	1294
2500	3236	2704	2013	1618
3000	3883	3245	2416	1941
4000	5177	4327	3221	2588
5000	6471	5409	4027	3236

Land Base Requirements for Dairy - Loose Housing: Lactating Cow Only (solid manure)

No. of Lactating Cows	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
30	25	21	15	12
80	66	55	41	33
100	82	69	51	41
120	99	83	61	49
140	115	96	72	58
160	132	110	82	66
180	148	124	92	74
200	165	138	102	82
225	185	155	115	93
250	206	172	128	103
275	226	189	141	113
300	247	206	154	124
350	288	241	179	144
400	329	275	205	165
450	371	310	231	185
500	412	344	256	206
550	453	379	282	226
600	494	413	307	247
700	576	482	359	288
800	659	551	410	329
900	741	619	461	371
1000	824	688	512	412
1500	1235	1032	769	618
2000	1647	1377	1025	824
2500	2059	1721	1281	1030
3000	2471	2065	1537	1235
4000	3294	2753	2050	1647
5000	4118	3442	2562	2059

Land Base Requirements for Dairy - Replacements: Bred Heifers Breeding to Calving (solid manure)

No. of Bred Heifers	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
30	9	7	6	4
80	24	20	15	12
100	30	25	18	15
120	35	30	22	18
140	41	35	26	21
160	47	39	29	24
180	53	44	33	27
200	59	49	37	30
225	66	55	41	33
250	74	62	46	37
275	81	68	50	41
300	89	74	55	44
350	103	86	64	52
400	118	99	73	59
450	133	111	83	66
500	148	123	92	74
550	162	136	101	81
600	177	148	110	89
700	207	173	128	103
800	236	197	147	118
900	266	222	165	133
1000	295	247	184	148
1500	443	370	275	221
2000	590	493	367	295
2500	738	616	459	369
3000	885	740	551	443
4000	1180	986	734	590
5000	1475	1233	918	738

Land Base Requirements for Dairy - Replacements: Growing Heifers 350 lbs to Breeding (solid manure)

No. of Growing Heifers	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
30	6	5	4	3
80	15	13	9	8
100	19	16	12	9
120	23	19	14	11
140	26	22	16	13
160	30	25	19	15
180	34	28	21	17
200	38	31	23	19
225	42	35	26	21
250	47	39	29	24
275	52	43	32	26
300	56	47	35	28
350	66	55	41	33
400	75	63	47	38
450	85	71	53	42
500	94	79	59	47
550	103	86	64	52
600	113	94	70	56
700	132	110	82	66
800	150	126	94	75
900	169	141	105	85
1000	188	157	117	94
1500	282	236	176	141
2000	376	314	234	188
2500	470	393	293	235
3000	564	471	351	282
4000	752	628	468	376
5000	940	786	585	470

Land Base Requirements for Dairy - Tie Stall: Lactating Cows Only (solid manure)

No. of Lactating Cows	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
30	24	20	15	12
80	63	53	39	31
100	79	66	49	39
120	94	79	59	47
140	110	92	69	55
160	126	105	78	63
180	142	118	88	71
200	157	131	98	79
225	177	148	110	88
250	197	164	122	98
275	216	181	135	108
300	236	197	147	118
350	275	230	171	138
400	315	263	196	157
450	354	296	220	177
500	393	329	245	197
550	433	362	269	216
600	472	394	294	236
700	550	460	343	275
800	629	526	391	315
900	708	592	440	354
1000	786	657	489	393
1500	1180	986	734	590
2000	1573	1315	979	786
2500	1966	1643	1223	983
3000	2359	1972	1468	1180
4000	3146	2629	1957	1573
5000	3932	3287	2447	1966

Land Base Requirements for Goats - Feeders (solid manure)

No. of Feeders	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
300	1	1	1	1
400	1	1	1	1
500	2	2	1	1
600	2	2	1	1
700	3	2	2	1
800	3	2	2	1
900	3	3	2	2
1000	4	3	2	2
10000	37	31	23	18
15000	56	47	35	27
20000	74	62	46	36
25000	93	78	58	45
30000	111	93	69	54

Land Base Requirements for Goats - Meat/Milk (solid manure)

No. of Ewes	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
100	4	3	2	2
200	8	7	5	4
250	10	8	6	5
500	20	17	12	10
750	30	25	19	15
1000	40	33	25	20
1250	50	41	31	25
1500	60	50	37	30
1750	70	58	44	35
2000	80	66	50	40

Land Base Requirements for Goats - Nannies/Billies (solid manure)

No. of Nannies/ Billies	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
100	2	1	1	1
200	3	3	2	2
300	5	4	3	2
400	6	5	4	3
500	8	7	5	4
600	10	8	6	5
700	11	9	7	6
800	13	11	8	6
900	14	12	9	7
1000	16	13	10	8
10000	161	134	100	80
15000	242	201	150	120
20000	322	268	200	160
25000	403	335	250	200
30000	483	402	300	240

Land Base Requirements for Horses - Donkeys (solid manure)

No. of Donkeys	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
100	11	9	7	5
200	22	18	13	11
300	32	27	20	16
400	43	36	27	22
500	54	45	34	27
600	65	54	40	32
700	76	63	47	38
800	86	72	54	43
900	97	81	60	49
1000	108	90	67	54
10000	1080	903	672	540
15000	1620	1355	1008	810
20000	2160	1806	1344	1080
25000	2700	2258	1680	1350
30000	3240	2709	2016	1620

Land Base Requirements for Horses - Feeders > 750 lbs (solid manure)

No. of Feeders	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
100	32	27	20	16
200	64	53	40	32
300	95	80	59	48
400	127	106	79	64
500	159	133	99	80
600	191	160	119	95
700	223	186	139	111
800	255	213	158	127
900	286	239	178	143
1000	318	266	198	159
10000	3182	2660	1980	1591
15000	4773	3990	2970	2387
20000	6364	5320	3960	3182
25000	7955	6650	4950	3978
30000	9546	7980	5940	4773

Land Base Requirements for Horses - Foals < 750 lbs (solid manure)

No. of Foals	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
100	10	8	6	5
200	19	16	12	10
300	29	24	18	14
400	38	32	24	19
500	48	40	30	24
600	57	48	36	29
700	67	56	42	33
800	76	64	48	38
900	86	72	53	43
1000	96	80	59	48
10000	955	798	594	477
15000	1433	1197	891	716
20000	1910	1596	1188	954
25000	2388	1995	1485	1193
30000	2865	2394	1782	1431

Land Base Requirements for Horses - Mules (solid manure)

No. of Mules	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
100	16	14	10	8
200	32	27	20	16
300	49	41	30	24
400	65	54	40	32
500	81	68	50	41
600	97	81	60	49
700	113	95	71	57
800	130	108	81	65
900	146	122	91	73
1000	162	135	101	81
10000	1620	1354	1008	810
15000	2430	2031	1512	1215
20000	3240	2708	2016	1620
25000	4050	3385	2520	2025
30000	4860	4062	3024	2430

Land Base Requirements for Horses - PMU > 1000 lbs (solid manure)

No. of Mares	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
100	39	32	24	19
200	77	64	48	39
300	116	96	72	58
400	154	128	96	77
500	193	161	120	96
600	231	193	144	116
700	270	225	169	135
800	308	257	193	154
900	347	289	217	173
1000	385	321	241	193

Land Base Requirements for Poultry - Chicken: Breeders (solid manure)

No. of Breeders	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
3000	23	19	14	11
5000	38	32	24	19
6000	46	38	28	23
7000	53	44	33	27
8000	61	50	38	30
9000	68	57	42	34
10000	76	63	47	38
12000	91	76	56	46
15000	114	95	71	57
20000	152	126	94	76
30000	228	189	141	114
50000	380	315	235	190
75000	570	473	353	285
100000	760	630	470	380

Land Base Requirements for Poultry - Chicken: Broilers/Pullets (solid manure)

No. of Broilers /Pullets	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
10000	33	27	20	16
15000	49	41	30	24
20000	65	54	41	33
25000	81	68	51	41
30000	98	81	61	49
35000	114	95	71	57
40000	130	108	81	65
50000	163	135	102	81
75000	244	203	152	122
100000	325	271	203	163
250000	813	677	508	406
500000	1625	1354	1016	813
750000	2438	2032	1524	1219
1000000	3251	2709	2032	1625

Land Base Requirements for Poultry - Chicken: Layers (belt cage)

No. of Layers	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
3000	17	14	10	8
5000	28	23	17	14
6000	33	28	20	17
7000	39	32	24	20
8000	44	37	27	22
9000	50	41	31	25
10000	55	46	34	28
12000	66	55	41	34
15000	83	69	51	42
20000	110	92	68	56
30000	165	138	102	84
50000	275	230	170	140
75000	413	345	255	210
100000	550	460	340	280

Land Base Requirements for Poultry - Chicken: Layers (deep pit)

No. of Layers	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
3000	17	14	11	9
5000	29	24	18	15
6000	35	29	22	17
7000	41	34	25	20
8000	46	38	29	23
9000	52	43	32	26
10000	58	48	36	29
12000	70	58	43	35
15000	87	72	54	44
20000	116	96	72	58
30000	174	144	108	87
50000	290	240	180	145
75000	435	360	270	218
100000	580	480	360	290

Land Base Requirements for Poultry - Layers (includes associated pullets) (liquid manure)

No. of Layers	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
3000	20	17	12	10
5000	33	28	21	17
6000	40	33	25	20
7000	46	39	29	23
8000	53	44	33	27
9000	60	50	37	30
10000	66	55	41	33
12000	80	66	50	40
15000	99	83	62	50
20000	133	110	83	66
30000	199	166	124	99
50000	331	276	207	166
75000	497	414	311	249
100000	663	552	414	331

Land Base Requirements for Poultry - Ducks (solid manure)

No. of Ducks	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
1000	2	1	1	1
1500	2	2	2	1
2000	3	3	2	2
3000	5	4	3	2
4000	6	5	4	3
5000	8	7	5	4
6000	10	8	6	5
7000	11	9	7	6
8000	13	11	8	6
9000	15	12	9	7
10000	16	13	10	8
15000	24	20	15	12
20000	32	27	20	16
25000	40	34	25	20
30000	48	40	30	24

Land Base Requirements for Poultry - Geese (solid manure)

No. of Geese	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
1000	3	3	2	2
1500	5	4	3	2
2000	6	5	4	3
3000	10	8	6	5
4000	13	11	8	6
5000	16	13	10	8
6000	19	16	12	10
7000	23	19	14	11
8000	26	22	16	13
9000	29	24	18	15
10000	32	27	20	16
15000	48	40	30	24
20000	65	54	40	32
25000	81	67	50	40
30000	97	81	61	48

Land Base Requirements for Poultry - Turkey: Broilers (solid manure)

No. of Broilers	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
1000	5	4	3	3
1500	8	7	5	4
2000	11	9	7	5
3000	16	13	10	8
4000	21	18	13	10
5000	27	22	17	13
6000	32	26	20	16
7000	37	31	23	18
8000	42	35	26	21
9000	48	40	30	23
10000	53	44	33	26
15000	80	66	50	39
20000	106	88	66	52
25000	133	110	83	65
30000	159	132	99	78

Land Base Requirements for Poultry - Turkey: Hens (light) (solid manure)

No. of Hens	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
1000	7	6	4	3
1500	10	8	6	5
2000	13	11	8	7
3000	20	17	12	10
4000	26	22	16	13
5000	33	28	21	17
6000	39	33	25	20
7000	46	39	29	23
8000	52	44	33	26
9000	59	50	37	30
10000	65	55	41	33
15000	98	83	62	50
20000	130	110	82	66
25000	163	138	103	83
30000	195	165	123	99

Land Base Requirements for Poultry - Turkeys: Toms/Breeders (solid manure)

No. of Toms/Breeders	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
1000	9	8	6	5
1500	14	12	9	7
2000	19	16	12	9
3000	28	24	18	14
4000	38	32	24	19
5000	47	40	30	24
6000	57	47	36	28
7000	66	55	42	33
8000	76	63	47	38
9000	85	71	53	43
10000	95	79	59	47
15000	142	119	89	71
20000	190	158	119	95
25000	237	198	148	119
30000	285	237	178	142

Land Base Requirements for Sheep - Ewes with Lambs (solid manure)

No. of Ewes	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
100	4	3	3	2
200	8	7	5	4
300	12	10	8	6
400	16	14	10	8
500	21	17	13	10
600	25	21	15	12
700	29	24	18	14
800	33	28	20	16
900	37	31	23	19
1000	41	34	26	21
10000	411	344	256	206
15000	617	516	384	309
20000	822	688	512	412
25000	1028	860	640	515
30000	1233	1032	768	618

Land Base Requirements for Sheep - Ewes/Rams (solid manure)

No. of Ewes/Rams	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
100	3	3	2	2
200	7	5	4	3
250	8	7	5	4
500	16	14	10	8
750	25	21	15	12
1000	33	27	21	16
1250	41	34	26	21
1500	49	41	31	25
1750	58	48	36	29
2000	66	55	41	33

Land Base Requirements for Sheep - Feeders (solid manure)

No. of Feeders	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
100	2	1	1	1
200	3	3	2	2
300	5	4	3	2
400	6	5	4	3
500	8	7	5	4
600	10	8	6	5
700	11	9	7	6
800	13	11	8	6
900	14	12	9	7
1000	16	13	10	8
10000	161	134	100	80
15000	242	201	150	120
20000	322	268	200	160
25000	403	335	250	200
30000	483	402	300	240

Land Base Requirements for Sheep - Lambs (solid manure)

No. of Lambs	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
200	1	1	1	1
300	2	1	1	1
400	2	2	1	1
500	3	2	2	1
600	3	3	2	2
700	4	3	3	2
800	5	4	3	2
900	5	4	3	3
1000	6	5	4	3
10000	58	49	36	29
15000	87	74	54	44
20000	116	98	72	58
25000	145	123	90	73
30000	174	147	108	87

Land Base Requirements for Swine - Farrow Only (liquid manure)

No. of Sows	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
50	8	7	5	4
100	17	14	10	8
125	21	17	13	10
150	25	21	15	12
175	29	24	18	15
200	33	28	21	17
250	41	35	26	21
300	50	42	31	25
350	58	48	36	29
400	66	55	41	33
500	83	69	52	41
600	99	83	62	50
750	124	104	77	62
1000	166	139	103	83
1500	249	208	155	124
2000	331	277	206	166
2500	414	346	258	207
3000	497	416	309	249
3500	580	485	361	290
4000	663	554	412	332
5000	829	693	516	415
8000	1326	1108	825	663
10000	1657	1385	1031	829
15000	2486	2078	1547	1244
20000	3314	2770	2062	1658

Land Base Requirements for Swine - Farrow Only (solid manure)

No. of Sows	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
50	10	8	6	5
100	19	16	12	10
125	24	20	15	12
150	29	24	18	15
175	34	29	21	17
200	39	33	24	19
250	49	41	30	24
300	58	49	36	29
350	68	57	42	34
400	78	65	48	39
500	97	81	61	49
600	117	98	73	58
750	146	122	91	73
1000	195	163	121	97
1500	292	244	182	146
2000	390	326	242	195
2500	487	407	303	244
3000	585	489	364	292
3500	682	570	424	341
4000	780	652	485	390
5000	975	815	606	487
8000	1559	1303	970	779
10000	1949	1629	1212	974
15000	2924	2444	1818	1461
20000	3898	3258	2424	1948

Land Base Requirements for Swine - Farrow to Finish (liquid manure)

No. of Sows	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
50	33	28	21	17
100	67	56	42	33
125	84	70	52	42
150	100	84	63	50
175	117	97	73	58
200	134	111	84	67
250	167	139	104	84
300	201	167	125	100
350	234	195	146	117
400	267	223	167	134
500	334	279	209	167
600	401	334	251	201
750	501	418	313	251
1000	668	557	418	334
1500	1003	836	627	501
2000	1337	1114	836	668
2500	1671	1393	1044	836
3000	2005	1671	1253	1003
3500	2339	1950	1462	1170
4000	2674	2228	1671	1337
5000	3342	2785	2089	1671
10000	6684	5570	4178	3342
15000	10026	8355	6266	5013
20000	13368	11140	8355	6684

Land Base Requirements for Swine - Farrow to Finish (solid manure)

No. of Sows	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
50	40	33	25	20
100	80	66	50	40
125	100	83	62	50
150	119	100	75	60
175	139	116	87	70
200	159	133	100	80
250	199	166	124	100
300	239	199	149	119
350	279	232	174	139
400	318	265	199	159
500	398	332	249	199
600	478	398	299	239
750	597	498	373	299
1000	796	663	498	398
1500	1194	995	746	597
2000	1592	1327	995	796
2500	1990	1659	1244	995
3000	2388	1990	1493	1194
3500	2786	2322	1742	1393
4000	3185	2654	1990	1592
5000	3981	3317	2488	1990
10000	7961	6634	4976	3981
15000	11942	9952	7464	5971
20000	15923	13269	9952	7961

Land Base Requirements for Swine - Farrow to Wean (liquid manure)

No. of Sows	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
50	10	9	6	5
100	21	17	13	10
125	26	21	16	13
150	31	26	19	15
175	36	30	22	18
200	41	34	26	21
250	51	43	32	26
300	62	51	39	31
350	72	60	45	36
400	82	69	51	41
500	103	86	64	51
600	123	103	77	62
750	154	129	96	77
1000	206	171	129	103
1500	308	257	193	154
2000	411	343	257	206
2500	514	428	321	257
3000	617	514	386	308
3500	720	600	450	360
4000	823	686	514	411
5000	1028	857	643	514
8000	1645	1371	1028	823
10000	2057	1714	1285	1028
15000	3085	2571	1928	1542
20000	4113	3428	2571	2057

Land Base Requirements for Swine - Farrow to Wean (solid manure)

No. of Sows	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
50	12	10	8	6
100	24	20	15	12
125	31	26	19	15
150	37	31	23	18
175	43	36	27	21
200	49	41	31	24
250	61	51	38	31
300	73	61	46	37
350	86	71	54	43
400	98	82	61	49
500	122	102	77	61
600	147	122	92	73
750	184	153	115	92
1000	245	204	153	122
1500	367	306	230	184
2000	490	408	306	245
2500	612	510	383	306
3000	735	612	459	367
3500	857	714	536	429
4000	980	817	612	490
5000	1225	1021	766	612
10000	2450	2041	1531	1225
15000	3674	3062	2297	1837
20000	4899	4083	3062	2450

Land Base Requirements for Swine - Feeders/Boars (liquid manure)

No. of Feeders/ Boars	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
100	7	6	4	4
500	36	30	22	18
600	43	36	27	22
750	54	45	34	27
1000	72	60	45	36
1200	86	72	54	43
1500	108	90	67	54
2000	144	120	90	72
3000	216	180	135	108
3500	252	210	157	126
4000	288	240	180	144
4500	324	270	202	162
5000	360	300	225	180
6000	432	360	270	216
7000	504	420	315	252
8000	576	480	360	288
9000	648	540	405	324
10000	720	600	450	360
11000	792	660	495	396
12000	864	720	540	432
13000	936	780	585	468
14000	1008	840	630	504
15000	1080	900	675	540
20000	1440	1200	900	720
25000	1800	1500	1125	900
30000	2159	1800	1350	1080
40000	2879	2399	1800	1440
50000	3599	2999	2249	1800

Land Base Requirements for Swine - Feeders/Boars (solid manure)

No. of Feeders/ Boars	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
100	8	6	5	4
500	38	32	24	19
600	46	38	28	23
750	57	47	36	28
1000	76	63	47	38
1200	91	76	57	46
1500	114	95	71	57
2000	152	126	95	76
3000	228	190	142	114
3500	265	221	166	133
4000	303	253	190	152
4500	341	284	213	171
5000	379	316	237	190
6000	455	379	284	228
7000	531	442	332	265
8000	607	506	379	303
9000	683	569	427	341
10000	758	632	474	379
15000	1138	948	711	569
20000	1517	1264	948	758
25000	1896	1580	1185	948
30000	2275	1896	1422	1138
40000	3034	2528	1896	1517
50000	3792	3160	2370	1896

Land Base Requirements for Swine - Growers/Roasters (liquid manure)

No. of Growers/ Roasters	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
500	22	18	14	11
600	26	22	16	13
700	30	25	19	15
800	35	29	22	17
900	39	33	24	20
1000	44	36	27	22
1500	65	55	41	33
2000	87	73	54	44
2500	109	91	68	55
3000	131	109	81	65
4000	174	146	108	87
5000	218	182	136	109
6000	261	218	163	131
7000	305	255	190	153
8000	348	291	217	174
9000	392	328	244	196
10000	435	364	271	218
15000	653	546	407	327
20000	870	728	542	436
25000	1088	910	678	545
30000	1305	1092	813	654
40000	1740	1456	1084	872
50000	2175	1820	1355	1090

Land Base Requirements for Swine - Growers/Roasters (solid manure)

No. of Growers/ Roasters	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
500	22	18	14	11
600	26	22	17	13
700	31	26	19	15
800	35	30	22	18
900	40	33	25	20
1000	44	37	28	22
1500	66	55	41	33
2000	88	74	55	44
2500	110	92	69	55
3000	132	111	83	66
4000	176	148	110	88
5000	221	185	138	111
6000	265	221	165	133
7000	309	258	193	155
8000	353	295	220	177
9000	397	332	248	199
10000	441	369	275	221
15000	662	554	413	332
20000	882	738	550	442
25000	1103	923	688	553
30000	1323	1107	825	663
40000	1764	1476	1100	884
50000	2205	1845	1375	1105

Land Base Requirements for Swine - Weaners (liquid manure)

No. of Weaners	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
500	12	10	7	6
600	14	12	9	7
700	16	13	10	8
800	19	15	12	9
900	21	17	13	10
1000	23	19	14	12
1500	35	29	22	17
2000	46	39	29	23
2500	58	48	36	29
3000	69	58	43	35
4000	93	77	58	46
5000	116	96	72	58
6000	139	116	87	69
7000	162	135	101	81
8000	185	154	116	93
9000	208	174	130	104
10000	231	193	145	116
15000	347	289	217	174
20000	463	386	289	231
25000	578	482	362	289
30000	694	578	434	347
40000	925	771	578	463
50000	1157	964	723	578

Land Base Requirements for Swine - Weaners (solid manure)

No. of Weaners	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
500	13	11	8	6
600	15	13	10	8
700	18	15	11	9
800	20	17	13	10
900	23	19	14	11
1000	25	21	16	13
1500	38	32	24	19
2000	51	42	32	25
2500	63	53	40	32
3000	76	63	48	38
4000	101	84	63	51
5000	127	106	79	63
6000	152	127	95	76
7000	177	148	111	89
8000	203	169	127	101
9000	228	190	143	114
10000	253	211	158	127
15000	380	317	238	190
20000	507	422	317	253
25000	634	528	396	317
30000	760	634	475	380
40000	1014	845	634	507
50000	1267	1056	792	634

Land Base Requirements for Wild Boar - Sows Farrowing (solid manure)

No. of Sows	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
50	7	6	4	4
100	14	12	9	7
200	28	24	18	14
300	42	35	26	21
400	56	47	35	28
500	70	59	44	35
600	84	71	53	42
700	99	82	61	49
800	113	94	70	56
900	127	106	79	63
1000	141	118	88	70
10000	1408	1177	876	704
15000	2112	1766	1314	1056
20000	2816	2354	1752	1408
25000	3520	2943	2190	1760
30000	4224	3531	2628	2112

Land Base Requirements for Wild Boar - Feeders (solid manure)

No. of Feeders	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	hectares	hectares	hectares	hectares
100	8	6	5	4
200	15	13	9	8
300	23	19	14	11
400	30	25	19	15
500	38	32	24	19
600	46	38	28	23
700	53	44	33	27
800	61	51	38	30
900	68	57	43	34
1000	76	63	47	38

Explanation

This is an estimate of the available nitrogen plus the portion of the organic nitrogen that is mineralized over the growing season. Estimated volatilization losses are subtracted from the sum of available plus mineralized nitrogen to give the Crop N.

Category of Livestock	Type of Livestock	Moisture %	Total N % Range	Crop N	
				lbs/ton	kg/tonne
Beef	Cows Finishers Feeders Feeder Calves	30 - 70 (50)	0.65 - 1.25	6.5	3.20
Dairy	Free Stall	85 - 95 (92)	0.35 - 0.60	3.3	1.70
	Tie Stall Loose Housing Replacements Calves	70 - 85 (80)	0.45 - 0.65	3.8	1.90
Swine	Liquid	90 - 99 (96)	0.20 - 0.55	3.1	1.60
	Solid	40 - 70 (50)	0.60 - 0.90	6.2	3.10
Poultry	Chicken - Pullets Broilers (solid)	30 - 50 (35)	3.50 - 4.00	36.8	18.40
	Chicken – Layers: Deep Pit (solid)	30 - 60 (50)	2.00 - 3.00	30.1	15.10
	Chicken – Layers: Belt Cage (solid)	30 - 60 (40)	2.50 - 3.50	37.7	18.90
	Chicken - Breeders (solid)	30 - 50 (35)	1.60 - 2.10	32.4	16.23
	Chicken - Layers (liquid)	85 - 95 (90)	0.50 - 1.00	7.5	3.76
	Turkey - Hens (light) Broilers Breeders Toms	30 - 50 (35)	2.50 - 3.50	32.4	16.23
	Ducks	50 - 70 (63)	0.60 - 0.94	3.7	1.85
	Geese	50 - 70 (63)	0.60 - 0.94	3.7	1.85

Category of Livestock	Type of Livestock	Moisture %	Total N % Range	Crop N	
				lbs/ton	kg/tonne
Horses	PMU	50 - 80 (75)	0.50 - 0.70	5.7	2.90
	Feeders Foals	30 - 60 (50)	1.00 - 2.00	14.3	7.10
	Mules Donkeys	30 - 70 (50)	0.80 - 1.10	9.5	4.80
Sheep	Ewes with Lambs Ewes/Rams Feeders	30 - 65 (50)	0.65 - 1.25	7.2	3.60
	Lambs	30 - 65 (50)	0.50 - 1.00	5.0	2.50
Goats	Meat Milk Nannies/Billies Feeders	30 - 65 (50)	0.50 - 0.75	4.5	2.30
Bison	Bison	25 - 50 (35)	0.50 - 0.75	4.5	2.20
Cervid	Elk Deer	25 - 50 (35)	0.50 - 0.75	4.5	2.20
Wild Boar	Feeders Sows	30 - 70 (50)	0.65 - 1.25	6.5	3.20

Assumed Crop Nutrient Requirements for Determining Land Base Guidelines

Nutrient	Soil Type			
	Dark Brown & Brown	Grey Wooded	Black	Irrigated
	kg/hectare	kg/hectare	kg/hectare	kg/hectare
Nitrogen	56	67	90	112

Explanation

The following design volumes and weights are the average volumes and weights expected from typical livestock housing systems in Alberta. Actual volumes and weights could differ due to variations in housing systems, type of manure storage, amount of dilution or wash water, precipitation, bedding, mechanical drying and treatment. These variables should be taken into account and adjustments made where appropriate.

Liquid Manure Production

Category of Livestock	Type of Livestock Liquid Manure Production	Daily			Monthly			9 Months			Yearly		
		gallons	litres	cu. ft	gallons	litres	cu.ft	gallons	cu. m (tonnes)	cu. ft.	gallons	cu. m (tonnes)	cu ft
Dairy (* count lactating cows only)	Free Stall: Lactating Cow Only[1]	21.7	98.6	3.50	661	3000	106	5956	27.0	956	7934	36.0	1274
	Free Stall: Dry cow	9.5	43.0	1.50	284	1290	46	2593	11.8	416	3454	15.7	554
	Free Stall: Lactating with Dry Cows Only*[2]	25.7	116.8	4.11	771	3504	123	7042	32.0	1126	9381	42.6	1500
Swine (*count sows only)	Farrow to Finish*	14.4	65.7	2.31	430	1950	69	3946	18.0	633	5272	24.0	844
	Farrow to Wean*	4.4	20.2	0.71	130	590	21	1206	5.5	194	1622	7.4	260
	Farrow Only*	3.5	15.9	0.56	110	500	17	959	4.4	153	1278	5.8	204
	Feeders Boars	1.6	7.1	0.25	50	230	7	438	1.9	69	568	2.6	91
	Growers Roasters	0.9	4.2	0.15	29	135	4	257	1.1	40	333	1.5	53
	Weaners	0.5	2.3	0.08	20	90	2	137	0.6	22	183	0.8	29
Poultry (per 100)	Chicken: Layers	6.0	27.1	0.95	180	820	29	1644	7.4	260	2174	10.0	348

[1] Includes milking parlour wash-water of 30 L per lactating cow
[2] Includes milking parlour wash-water of 30 L per lactating cow (zero milking parlour wash-water for dries)
Note: Dairy associated livestock is usually assumed to be solid manure production

Explanation

The following design volumes and weights are the average volumes and weights expected from typical livestock housing systems in Alberta. Actual volumes and weights could differ due to variations in housing systems, type of manure storage, precipitation, and bedding. These variables should be taken into account and adjustments made where appropriate.

Solid Manure Production

Category of Livestock	Type of Livestock	Daily			Monthly			9 Months				Yearly			
		lbs	kgs	cu. ft	lbs	kgs	cu.ft	tons	tonnes	cu.ft	cu. m	tons	tonnes	cu.ft	cu. m
Beef	Cows/Finishers 900 lbs+	13.1	5.9	0.32	390	180	9.6	1.8	1.6	88	2.5	2.4	2.2	117	3.3
	Beef Feeders - 900 lbs	8.4	3.8	0.21	250	110	6.2	1.1	1.0	56	1.6	1.5	1.4	75	2.2
	Feeder Calves - 550 lbs	3.3	1.5	0.08	100	50	2.4	0.5	0.4	22	0.6	0.6	0.54	29	0.8
Dairy	Tie Stall: Lactating Cow Only	139.7	63.5	2.66	4190	1900	79.7	19.1	17.3	728	20.3	25.5	23.1	970	27.5
	Loose Housing: Lactating Cow	146.3	66.5	2.78	4390	2000	83.5	20.0	18.2	762	21.3	26.7	24.2	1016	28.7
	Dry Cow	70.0	31.8	1.30	2100	955	40.0	9.6	8.7	356	9.9	12.8	11.6	487	13.4
	Replacements: Bred Heifers (breeding to calving)	60.5	27.5	1.16	1819	832	34.5	8.3	7.5	315	8.9	11.0	10.0	420	12.0
	Replacements: Growing Heifers (350 lbs to breeding)	42.9	19.5	0.82	1290	590	24.5	5.9	5.3	224	6.3	7.8	7.1	298	8.5
	Calves - 350 lbs	2.9	1.3	0.07	90	40	2.1	0.4	0.4	20	0.5	0.5	0.5	26	0.7
Swine (* count sows only)	Farrow to Finish*	86.4	39.3	1.74	2590	1180	52.3	11.8	10.7	478	13.3	15.8	14.3	637	18.0
	Farrow to Wean*	26.6	12.1	0.54	800	360	16.1	3.6	3.3	147	4.1	4.9	4.4	196	5.6
	Farrow Only*	21.3	9.7	0.43	640	290	12.9	2.9	2.6	118	3.3	3.9	3.5	157	4.4
	Feeders Boars	8.2	3.7	0.17	250	110	5.0	1.1	1.0	46	0.3	1.5	1.4	61	1.8
	Growers Roasters	4.8	2.2	0.10	147	65	2.9	0.7	0.6	27	0.8	0.9	0.8	36	1.0
	Weaners	2.8	1.3	0.06	80	40	1.7	0.4	0.3	15	0.4	0.5	0.5	20	0.5

Category of Livestock	Type of Livestock	Daily			Monthly			9 Months				Yearly			
		lbs	kgs	cu. ft	lbs	kgs	cu.ft	tons	tonnes	cu.ft	cu. m	tons	tonnes	cu.ft	cu. m
Poultry (per 100)	Chicken: Breeders	15.8	7.2	0.59	480	220	17.8	2.2	2.0	163	4.5	2.9	2.6	217	6.1
	Chicken: Layers (belt cage)	9.9	4.5	0.41	300	140	12.3	1.4	1.2	112	3.1	1.8	1.6	149	4.2
	Chicken: Layers (deep pit)	13.0	5.9	0.31	390	180	9.2	1.8	1.6	84	2.3	2.4	2.2	112	3.2
	Chicken: Pullets/Broilers	6.0	2.7	0.30	180	82	8.9	0.8	0.7	80	2.3	1.1	1.0	108	3.1
	Turkey: Toms/Breeders	19.8	9.0	1.28	590	270	38.5	2.7	2.5	351	9.8	3.6	3.3	468	13.2
	Turkey: Hens	13.6	6.2	0.85	410	190	25.4	1.9	1.7	232	6.5	2.5	2.3	309	8.8
	Turkey: Broilers	11.0	5.0	0.51	330	150	15.3	1.5	1.4	140	3.9	2.0	1.8	186	5.3
	Ducks	11.9	5.4	0.44	360	165	13.4	1.6	1.5	122	3.4	2.2	2.0	163	4.5
	Geese	23.7	10.8	0.88	720	330	26.8	3.3	3.0	245	6.7	4.3	3.9	326	9.1
Horses	PMU > 1000 lbs	45.8	20.8	0.92	1370	620	27.7	6.3	5.7	253	7.0	8.4	7.6	337	9.5
	Feeders > 750 lbs	15.2	6.9	0.46	460	210	13.9	2.1	1.9	127	3.5	2.8	2.5	169	4.8
	Foals < 750 lbs	4.6	2.1	0.14	138	63	4.2	0.6	0.6	38	1.1	0.8	0.8	51	1.4
	Mules	11.4	5.2	0.35	340	150	10.4	1.6	1.4	95	2.7	2.1	1.9	127	3.6
	Donkeys	7.6	3.5	0.23	230	100	6.9	1.0	0.9	63	1.8	1.4	1.3	84	2.4
Sheep	Ewes with Lambs	3.9	1.8	0.13	120	55	3.8	0.5	0.5	35	1.0	0.7	0.6	46	1.3
	Ewes/Rams	3.1	1.4	0.10	90	41	3.0	0.4	0.4	28	7.6	0.6	0.5	37	1.0
	Lambs	0.8	0.4	0.02	23	11	0.7	0.1	0.1	7	0.2	0.1	0.1	9	0.2
	Feeders	1.5	0.7	0.05	50	23	1.5	0.2	0.2	14	0.4	0.3	0.3	18	0.5
Goats	Meat/Milk (per ewe)	5.9	2.7	0.19	180	80	5.8	0.8	0.7	52	1.5	1.1	1.0	70	2.0
	Nannies/Billies	3.1	1.4	0.10	90	40	3.0	0.4	0.4	27	7.6	0.6	0.5	36	1.9
	Feeders	0.6	0.3	0.02	20	10	0.5	0.1	0.1	5	.02	0.1	0.1	6	0.2
Bison	Cows Bulls	7.3	3.3	0.18	220	100	5.3	1.0	0.9	49	1.4	1.3	1.2	65	1.9
Cervid	Elk	5.8	2.6	0.14	170	77	4.3	0.8	0.7	39	1.1	1.1	1.0	52	1.4
	Deer	2.9	1.3	0.07	90	40	2.1	0.4	0.4	19	0.5	0.5	0.5	25	0.7
Wild Boar	Feeders	6.6	3.0	0.14	200	88	4.0	0.9	0.8	37	1.1	1.2	1.1	49	1.4
	Sow: Farrowing	14.9	6.8	0.30	448	203	9.0	2.0	1.8	83	2.3	2.7	2.5	110	3.1

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